	Application No.	Applicant(s)
Notice of Allowability	09/998,160	ORII, SHIGEO
	Examiner	Art Unit	
	Jason Mitchell	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the response filed 4/25/05*.

2. ☒ The allowed claim(s) is/are *1,2,5,7,8,10-12,15,17,18,20-22,25,27,28 and 30*.

3. ☒ The drawings filed on *03 December 2001* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☒ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: TRANSLATION

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____.

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *07142005* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37

CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no

later than the payment of the issue fee.

     1. (Currently Amended) A computer-implemented method of calculating a parallel
efficiency of a parallel computer system in which no load imbalance exists, comprising:

     obtaining and storing into a storage a first value concerning a processing time for a
portion to be sequentially processed during an execution of a parallel processing program, a
second value concerning a processing time for a portion to be parallel processed during the
execution of said parallel processing program, and a third value concerning a processing time
caused by an overhead for parallel processing from a result of one measurement for said
parallel computer system;

     calculating and storing into said storage a parallelized rate, a sequential calculation time
ratio that is defined as a ratio of said first value to a value concerning a total processing time
during the execution of said parallel processing program, and a parallel overhead ratio by using
said first value, said second value, and said third value; and

     calculating and storing into said storage a parallel efficiency by using said parallelized
rate, said sequential calculation time ratio, and said parallel overhead ratio, wherein

       calculating said parallelized rate includes

          multiplying said second value by the number of processors to obtain a fourth
value concerning a processing time in sequential processing for the portion to be parallel
processed during the execution of said parallel processing program, and

          calculating (said fourth value)/(said first value + said fourth value) as said
parallelized rate, and

       calculating said parallel efficiency includes calculating 1/(said parallelized rate) x (1-(said
sequential calculation time ratio)-(said parallel overhead ratio)) as said parallel
efficiency.

3. (Cancelled)

4. (Cancelled)

5. (Currently Amended) The computer-implemented method as set forth in claim 1, wherein said first calculating ~~comprises~~<u>further includes</u> dividing said third value by a value concerning a total processing time during the execution of said parallel processing program to obtain said parallel overhead ratio.

6. (Cancelled)

8. (Currently Amended) The computer-implemented method as set forth in claim 1, further comprising analyzing contribution of said parallelized rate, said sequential calculation time ratio, and parallel overhead ratio toward said parallel efficiency ~~that is defined as 1/(said parallelized rate) x (1-(said sequential calculation time ratio) - (said parallel overhead ratio))~~.

9. (Cancelled)

10. (Currently Amended) A computer-implemented method of calculating a parallel efficiency of a parallel computer system in which no load imbalance exists, comprising:

obtaining and storing into a storage[[,]] a first value concerning a processing time for a portion to be sequentially processed during an execution of a parallel processing program, a second value concerning a processing time for a portion to be parallel processed during the execution of said parallel processing program, and a third value concerning a total processing time for said parallel processing program;

calculating and storing into said storage a parallelized rate by using the obtained first value and the obtained second value; and

calculating and storing into said storage a product of an inverse of said parallelized rate, an inverse of said third value, and said second value as a parallel efficiency<u>, wherein</u>

<u>calculating said parallelized rate includes</u>

<u>multiplying said second value by the number of processors to obtain a fourth</u>

<u>value concerning a processing time in sequential processing for the portion to be parallel</u>

processed during the execution of said parallel processing program, and

calculating (said fourth value)/(said first value + said fourth value) as said
parallelized rate.

11. (Currently Amended) A computer-readable storage medium storing a program for
causing a computer to calculate a parallel efficiency of a parallel computer system in which no
load imbalance exists, said program comprising:

obtaining and storing into a storage a first value concerning a processing time for a
portion to be sequentially processed during an execution of a parallel processing program, a
second value concerning a processing time for a portion to be parallel processed during the
execution of said parallel processing program, and a third value concerning a processing time
caused by an overhead for parallel processing from a result of one measurement for said
parallel computer system;

calculating and storing into said storage a parallelized rate, a sequential calculation time
ratio that is defined as a ratio of said first value to a value concerning a total processing time
during the execution of said parallel processing program, and a parallel overhead ratio by using
said first value, said second value, and said third value; and

calculating and storing into said storage a parallel efficiency by using said parallelized
rate, said sequential calculation time ratio, and said parallel overhead ratio, wherein

calculating said parallelized rate includes

multiplying said second value by the number of processors to obtain a fourth
value concerning a processing time in sequential processing for the portion to be parallel
processed during the execution of said parallel processing program, and

calculating (said fourth value)/(said first value + said fourth value) as said
parallelized rate, and

calculating said parallel efficiency includes calculating 1/(said parallelized rate) x (1-(said
sequential calculation time ratio)-(said parallel overhead ratio)) as said parallel efficiency.

13. (Cancelled)

14. (Cancelled)

15. (Currently Amended) The computer-readable storage medium as set forth in claim 11, wherein said first calculating ~~comprises~~ <u>further includes</u> dividing said third value by a value concerning a total processing time during the execution of said parallel processing program to obtain said parallel overhead ratio.

16. (Cancelled)

18. (Currently Amended) The computer-readable storage medium as set forth in claim 11, said program further comprising analyzing contribution of said parallelized rate, said sequential calculation time ratio, and parallel overhead ratio toward said parallel efficiency ~~that is defined as 1/(said parallelized rate) x (1-(said sequential calculation time ratio) - (said parallel overhead ratio)~~.

19. (Cancelled)

20. (Currently Amended) A computer-readable storage medium storing a program for causing a computer to calculate a parallel efficiency of a parallel computer system in which no load imbalance exists, said program comprising:

obtaining and storing into a storage a first value concerning a processing time for a portion to be sequentially processed during an execution of a parallel processing program, a second value concerning a processing time for a portion to be parallel processed during the execution of said parallel processing program, and a third value concerning a total processing time for said parallel processing program;

calculating and storing into said storage a parallelized rate by using the obtained first value and the obtained second value; and

calculating and storing into said storage a product of an inverse of said parallelized rate, an inverse of a value of said third value, and said second value as a parallel efficiency<u>, wherein</u>

<u>calculating said parallelized rate includes</u>

<u>multiplying said second value by the number of processors to obtain a fourth value concerning a processing time in sequential processing for the portion to be parallel processed during the execution of said parallel processing program, and</u>

<u>calculating (said fourth value)/(said first value + said fourth value) as said parallelized</u>

rate.

21. (Currently Amended) An apparatus for calculating a parallel efficiency of a parallel computer system in which no load imbalance exists, comprising:

means for obtaining and storing into a storage a first value concerning a processing time for a portion to be sequentially processed during an execution of a parallel processing program, a second value concerning a processing time for a portion to be parallel processed during the execution of said parallel processing program, and a third value concerning a processing time caused by an overhead for parallel processing from a result of one measurement for said parallel computer system;

a first calculator for calculating and storing into said storage a parallelized rate, a sequential calculation time ratio that is defined as a ratio of said first value to a value concerning a total processing time during the execution of said parallel processing program, and a parallel overhead ratio by using said first value, said second value, and said third value; and

a second calculator for calculating and storing into said storage a parallel efficiency by using said parallelized rate, said sequential calculation time ratio, and said parallel overhead ratio, wherein

said first calculator includes

a multiplier for multiplying said second value by the number of processors to obtain a fourth value concerning a processing time in sequential processing for the portion to be parallel processed during the execution of said parallel processing program, and

a calculator for calculating (said fourth value)/(said first value + said fourth value) as said parallelized rate, and

said second calculator includes a calculator for calculating 1/(said parallelized rate) x (1 - (said sequential calculation time ratio) - (said parallel overhead ratio)) as said parallel efficiency.

23. (Cancelled)

24. (Cancelled)

25. (Currently Amended) The apparatus as set forth in claim 21, wherein said first

calculator comprisesfurther includes a divider for dividing said third value by a value concerning a total processing time during the execution of said parallel processing program to obtain said parallel overhead ratio.

26. (Cancelled)

28. (Currently Amended) The apparatus as set forth in claim 21, further comprising an analyzer for analyzing contribution of said parallelized rate, said sequential calculation time ratio, and parallel overhead ratio toward said parallel efficiency that is defined as 1/(said parallelized rate) x (1-(said sequential calculation time ratio) - (said parallel overhead ratio)).

29. (Cancelled)

30. (Currently Amended) An apparatus for calculating a parallel efficiency of a parallel computer system, comprising:

    means for obtaining and storing into a storage a first value concerning a processing time for a portion to be sequentially processed during an execution of a parallel processing program, a second value concerning a processing time for a portion to be parallel processed during the execution of said parallel processing program, and a third value concerning total processing time for said parallel processing program;

    a first calculator for calculating and storing into said storage a parallelized rate by using the obtained first value and the obtained second value; and

    a second calculator for calculating and storing into said storage a product of an inverse of said parallelized rate, an inverse of a value of said third value, and said second value as a parallel efficiency, wherein

        said first calculator includes

            a multiplier for multiplying said second value by the number of processors to obtain a fourth value concerning a processing time in sequential processing for the portion to be parallel processed during the execution of said parallel processing program, and

            a calculator for calculating (said fourth value)/(said first value + said fourth value) as said parallelized rate.

Authorization for this examiner's amendment was given in a telephone interview

with Allison Olenginski on 7/18/05.

Reasons For Allowance

The following is an examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fail to teach or suggest, in combination

with the other claimed limitations, the limitations recited in claims 1, 11, and 21:

> A computer-implemented method for calculating a parallel efficiency of a parallel
> computer system in which no load imbalance exists, where calculating said parallelized
> rate includes:
> multiplying said second value by the number of processors to obtain a fourth
> value concerning a processing time in sequential processing for the portion to be parallel
> processed during the execution of said parallel processing program, and
> calculating (said fourth value)/(said first value + said fourth value) as said
> parallelized rate, and
> calculating said parallel efficiency includes calculating 1/(said parallelized rate) x
> (1-(said sequential calculation time ratio)-(said parallel overhead ratio)) as said parallel
> efficiency.

Further the cited prior art also fails to teach or suggest, in combination with the other

claimed limitations, the limitations recited in claims 10, 20 and 30:

> A computer-implemented method of calculating a parallel efficiency of a parallel
> computer system in which no load imbalance exists, comprising:
> calculating and storing into said storage a product of an inverse of said
> parallelized rate, an inverse of said third value, and said second value as a parallel
> efficiency, wherein

calculating said parallelized rate includes

multiplying said second value by the number of processors to obtain a fourth
value concerning a processing time in sequential processing for the portion to be parallel
processed during the execution of said parallel processing program, and
calculating (said fourth value)/(said first value + said fourth value) as said

parallelized rate.

The closest prior art, "The Performance and Scalability of Parallel Systems" by Neil

James Davies, teaches, obtaining and storing values concerning a sequential

processing time, a parallel processing time, and an overhead processing time (). Davies

also teaches, calculating a parallelized rate and a sequential ratio.

Davies fails to teach or suggest a parallelized efficiency equals 1/(the parallelized rate)

x (1-(the sequential calculation time ratio)-(the parallel overhead ratio)). Davies also fails

to teach or suggest a parallelized efficiency equals a product of an inverse of the

parallelized rate, an inverse of the total processing time, and a parallel processing time

as a parallel efficiency, as recited in claims 10, 20 and 30.

Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany

the issue fee. Such submissions should be clearly labeled "Comments on Statement of

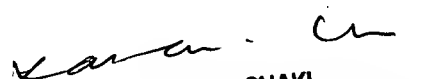Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Mitchell whose telephone number is (571) 272-3728. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason Mitchell
7/18/05

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